REMARKS

Claims 1-27 are pending in this application. Claims 1-27 stand rejected.

Claims 1, 5, 7-9, 11, 15, 17, 18, 21-24, 26 and 27 have been amended, and claims 4, 6, 14 and 16 have been canceled without prejudice.

REJECTIONS UNDER 35 U.S.C. § 103:

Reconsideration is respectfully requested of the rejections of claims 1-5, 7-9, 14, 15, 17 and 24-26 under 35 U.S.C. § 103(a) as being unpatentable over admitted prior art in view of Iyer (U.S. Patent No. 6,383,723).

Applicants respectfully submit that admitted prior art ("APA") and Iyer, when taken alone or in combination, fail to teach or suggest "cleaning oxide residues generated in forming an anti-reflective layer from the anti-reflective layer using a first cleaning solution including sulfuric acid", as recited in amended claims 1 and 24. Applicants respectfully submit that admitted prior art ("APA") and Iyer, when taken alone or in combination, fail to teach or suggest "cleaning oxide residues generated in forming a hard mask layer from the hard mask layer using a first cleaning solution including sulfuric acid", as recited in amended claim 9.

As acknowledged by the Examiner, APA does not teach these features.

The addition of Iyer does not render cleaning oxide residues generated in forming an anti-reflective layer (or a hard mask layer) from the anti-reflective layer (or a hard mask layer). In contrast, the disclosure in Iyer suggests removing nitrogen-containing contaminants such as atmospheric ammonia or ammonium ion from an anti-reflective coating (28). See, col. 1, lines 40-50, col. 3, lines 50-55.

Further, Iyer does not suggest the desirability of the combination. The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. See, MPEP 2143.01; *In re Mills*, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990). Indeed, Iyer does not suggest removing oxide residues from an anti reflective layer because in the Iyer process, the oxide residues problem may not arise. Applicant notes that Iyer does not describe the use of any purge gas including nitrogen oxide that causes oxide residues on an anti reflective layer. Thus, one ordinary skill in the art looking to remove oxide residues would not look to Iyer to arrive at the claimed solution.

Applicants respectfully submit that claims 1, 9 and 24 are patentable over the references for additional reasons. For instance, Iyer does not disclose a second cleaning solution including SC 1. Applicants respectfully submit that the deionized water of Iyer is different from SC 1 of the instant embodiment because SC 1 comprises ammonium hydroxide (NH_4OH), hydrogen peroxide (H_2O_2) and deionized water (H_2O) by a volume ratio of about 1:1:5.

Therefore, claims 1, 9 and 24 are patentable over the cited references. Claims 5, 7 and 8 depend from claim 1. Claims 15 and 17 depend from claim 9. Claims 25-26 depend from claim 24. These dependent claims are believed to be patentable over APA in view of Iyer for at least the reason of their dependency on respective base claims 1, 9 and 24. Claims 4 and 14 have been canceled.

Applicants respectfully submit that claim 7 is patentable over the references for additional reasons. For instance, APA and Iyer, when taken alone or in combination, fail to teach or suggest "cleaning the oxide residues from the anti-reflection layer using the

second cleaning solution including SC 1 is performed at a temperature of about 30 to about 70°C for about 5 to about 15 minutes ", as recited in amended claim 7.

As acknowledged by the Examiner, APA does not teach these features.

Further, the addition of Iyer does not render the claimed features obvious. Examiner states that "even though Iyer doesn't describe the second cleaning step, DI water rinsing, is performed at a T 30-70 degrees Celsius for about 5-15 mins; however, one skilled in the art would find it obvious to determine the T and time of the DI water rinsing through routine experimentation in order to clean the wafer with a reasonable expectation of success." Applicants respectfully disagree.

One skilled in the art would not find it obvious to determine the temperature and time of the DI water rinsing through routine experimentation in order to clean the wafer with a reasonable expectation of success. Iyer does not even disclose any optimum or workable ranges of temperatures and time.

Therefore, based on the foregoing, Applicants respectfully request that the Examiner withdraw the rejections of claims 1-3, 5, 7-9, 15, 17 and 24-26 under 35 U.S.C. § 103(a) and that claims 1-3, 5, 7-9, 15, 17 and 24-26 are in condition for allowance.

Reconsideration is respectfully requested of the rejections of claims 18, 22 and 23 under 35 U.S.C. § 103(a) as being unpatentable over Yang (U.S. Patent No. 6,159,860) in view of Iyer.

Applicants respectfully submit that Yang and Iyer, when taken alone or in combination, fail to teach or suggest "cleaning oxide residues generated in forming a hard mask layer from the hard mask layer using a first cleaning solution including sulfuric acid", as recited in amended claim 18.

As acknowledged by the Examiner, Yang does not teach these features. See page 4 of the Final Office Action. Further, the addition of Iyer does not render the claimed features obvious for at least the same reasons provided above.

Therefore, claim 18 is patentable over the cited references. Claims 22 and 23 depend from claim 18. These dependent claims are believed to be patentable over Yang in view of Iyer for at least the reason of their dependency on base claim 18.

Applicants respectfully submit that claim 23 is patentable over the references for at least the same reasons provided for claim 7. Therefore, based on the foregoing, Applicants respectfully request that the Examiner withdraw the rejections of claims 18, 22 and 23 under 35 U.S.C. § 103(a) and that claims 18, 22 and 23 are in condition for allowance.

Reconsideration is respectfully requested of the rejections of claims 6, 16 and 27 under 35 U.S.C. § 103(a) as being unpatentable over admitted prior art/Iyer or Yang/Iyer as applied to claims 1, 9 and 24 above, and further in view of Schulz (U.S. Patent No. 5,637,151).

Claim 27 depends from claim 24. Claim 27 is believed to be patentable over the combination of cited references for at least the same reasons given above for the base claim 24. Claims 6 and 16 have been canceled.

Indeed, as explained above, APA, Iyer and Yang does not disclose or suggest these features. Schulz does not cure the deficiencies of APA, Iyer and Yang. Accordingly, reconsideration of the obviousness rejections is respectfully requested.

Reconsideration is respectfully requested of the rejections of claims 10-13 and 19-21 under 35 U.S.C. § 103(a) as being unpatentable over admitted prior art/Iyer or

Yang/Iyer as applied to claims 9 and 18 above, and further in view of Okoroanyanwu (U.S. Patent No. 6,753,247).

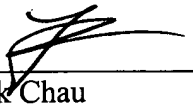
Claims 10-13 depend from claim 9 and claims 19-21 depend from claim 18. Claims 10-13 and 19-21 are believed to be patentable over the combination of cited references for at least the same reasons given above for respective base claims 9 and 18.

Indeed, as explained above, APA, Iyer and Yang does not disclose or suggest these features. Okoroanyanwu does not cure the deficiencies of APA, Iyer and Yang. Accordingly, reconsideration of the obviousness rejections is respectfully requested.

For the foregoing reasons, the present application is believed to be in condition for allowance.

An early and favorable reconsideration is earnestly solicited. If the Examiner has any further questions or comments, the Examiner may telephone Applicants' Attorney to reach a prompt disposition of this application.

Respectfully submitted,



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